

ON THREE NEW SPECIES OF THE GENUS
GLOSSINA, TOGETHER WITH A DESCRIPTION OF THE HITHERTO UNKNOWN
MALE OF *GLOSSINA GROSSA*, BIGOT

BY

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The discovery of the three species of *Glossina* herein described was brought about by an examination of the morphological characters of the genital armature of the males. In the first instance some doubt had been entertained regarding the correct specific identity of certain dark forms of tsetse flies which had been placed in the collections of this School as doubtful examples of *Glossina morsitans*, West. The examples in question were captured by Major Dansey-Browning, in the Bahr-el-Ghazal Province of the Sudan, during the winters of the years 1905 and 1906. These captures were recorded* by him in the year 1908, with a note as to the peculiar dark colour which they presented in life. More recently a long series of tsetse flies, which were collected by Dr. F. W. McCay, on the Katangum River, between Katangum and Geidam, Northern Nigeria, were presented to this School. These examples were found to be specifically identical with those taken in the Sudan. On comparing the genital armature of these dark forms with those of typical *G. morsitans* from Rhodesia, it was found that they were structurally distinct; it became necessary, therefore, to raise the dark forms to specific rank. On the examination of some *western* examples of the so-called *Glossina morsitans* one found also that these presented the same morphological characters as those of the dark forms both from the Sudan and Katangum. My interpretation of these specific differences is that all the tsetse flies occurring in the western regions of Africa which have hitherto been

* Jour. Roy. Army Med. Cor., Vol. X, p. 427.

considered as *Glossina morsitans* will prove, on further examination, to be referable to the species herein described as *Glossina submorsitans*, n. sp.; what the exact distribution of this insect is remains to be seen, as at the present moment I have no further material available for examination.

The examination of the morphological characters of the armature of the males of all the other known species of the genus *Glossina* has revealed the fact that there are four distinct species of that group of tsetse flies, of which *G. fusca*, Walk., may be taken as a type. These are *G. longipennis*, Corti, and *G. brevipalpis*, Newstead, from the eastern side of the continent; while *G. fusca*, and *G. grossa*, Bigot, are, as far as I can gather at present, the western representatives of this group.

With regard to the large tsetse fly herein referred to as Bigot's *Glossina grossa*, I had at first thought this to be a new and hitherto undescribed species; but, on further consideration, I came to the conclusion that, as it agreed so well with the author's description,* it must be referable to this insect; all the more so on account of the statement made by Austen,† that 'the apex of the third joint of the antennae is very prominent.' Austen, who had evidently examined Bigot's type, did not, however, consider this marked character of specific importance, and sunk *Glossina grossa* as a synonym of *G. fusca*, Walk. Should my examples eventually prove to be specifically distinct from *G. grossa* I would suggest the specific name *nigrofusca*.

It may be interesting to add also, in this connection, that there are no structural differences between *Glossina palpalis* and the var. *wellmanni*; so that for strictly medical purposes I would suggest that the var. *wellmanni* should be sunk, all the more so seeing that *Glossina palpalis* is given to great variation in size, and that there are colour varieties or forms which are intermediate between typical *palpalis* and its var. *wellmanni*.

I have, so far, been able to examine but one specimen of *Glossina pallidipes*, Aust. This proves to be specifically identical with *Glossina longipalpis*, Wied. The most, therefore, that one

* Ann. Soc. Ent. Fr., Vol. LX, p. 377 (1901). Female only.

† Monograph of Tsetse Flies, p. 97.

can do in the light of this discovery is, I feel, to make *G. pallidipes* a colour variety of *G. longipalpis*.

A more extensive paper dealing with the morphological characters of the genital armature of all the known tsetse flies is in the course of preparation, and will be published early in the new year, together with a series of illustrations which will aid the student in the exact determination of this genus of pathogenic insects.

Glossina submorsitans, n. sp.

Nearly related to *Glossina morsitans*, Westw., in having the tips of all the tarsi dark. There are two well-marked varieties: a *dark form* and a *light form*. The former may be readily distinguished by its general dusky or dull vinous-grey colour and generally smaller size; the pale form, however, very closely resembles *G. morsitans* in the general colour of the abdomen; but the bilateral abdominal bands are:—

- (a) much more clearly and sharply defined.
- (b) equally and more narrowly interrupted in the median line, between the *third*, fourth, and fifth segments.
- (c) slightly rounded medially and suddenly tapering towards the lateral margins.

In *G. morsitans* the bands are:—

- (a) not so sharply defined medially.
- (b) gradually interrupted in the middle line, the space between the *third* being much greater than the space between the fifth, and the dark colour gradually shades off into the pale colour forming the median line.
- (c) *broadly* rounded medially, and a very gradually tapering towards the lateral margins.

The morphological character of the genital armature of the males of these species, respectively, are easily separable by the form of the median processes.

DARK FORM.—*Thorax* grey, with the usual dark brownish longitudinal markings, generally relatively small, sometimes reduced to elongated spots. *Abdomen* dull olivaceous grey, with

a faint vinous tinge, most pronounced on the second and third segments; second segment with a large bilateral infuscated blotch, often enclosing a small but distinct sub-central blackish spot, but occasionally also the spots are separated, and in some examples the small dark one only remains; the third to the sixth segment, inclusive, with sharply defined and conspicuous blackish bands, narrowly interrupted in the median line. *Legs* with the tips of the last two segments of the front and middle tarsi black; the last two segments of the hind tarsi uniformly black.

Length.—7 to 8 mm.; length of wing, 7 to 8 mm.

Type, male and female (Coll. British Museum), Katangum River, between Katangum and Geidam, Northern Nigeria. Dr. F. W. McKay.

PALE FORM.—*Thoracic* markings similar to those in the dark form; but the pleurae are generally paler. *Abdomen* greyish buff, with a pale vinous tinge; bilateral blackish bands, very sharply and clearly defined and narrowly interrupted in the median line; those on the *third, fourth, and fifth segments* being almost equally separated by the pale median stripe; the bands are also only very slightly rounded medially, and rather suddenly so towards the lateral margins. *Legs* as in the dark forms.

Two co-type males and a female (Coll. Brit. Museum) were captured by Dr. A. Kinghorn at Sabiya-Boge, Northern Ashanti, 24th April, 1910. Eight additional specimens were also captured by Dr. Kinghorn in various localities in Ashanti, all of which have pale abdomens as in the types.

Glossina brevipalpis, n. sp.

This tsetse fly may be easily recognised from the two western representatives of the fusca group (*G. fusca* and *G. grossa*) by its shorter and stouter palpi, its generally paler colour, and somewhat indefinite thoracic markings; in the morphological characters of the male armature; also by the great length of the median process; the presence of a long bilateral row or band, of squamose spines; and in the form of the harpes.

Length.—10-12 mm.; length of wing, 11-11.50 mm.

MALE.—*Head* with the front uniformly pale ochreous brown, frontal margins brighter. *Antennae* pale ochreous, with the anterior

half infuscated; arista infuscated at the base. *Eyes* slightly converging. *Palpi* relatively short and stout. *Thorax* dark brown, with the markings dusky grey-brown, these vary in intensity, but are usually more or less indefinite.

Abdomen dark brown; second segment scarcely paler than the others; margins and posterior angles sometimes narrowly paler.

Legs pale ochreous brown; last two segments of middle and hind tarsi dark, blackish; last two segments of front tarsi either with or without brownish tips; front femora infuscated dorsally, and slightly so laterally on the inside; hind tibiae with a more or less distinct infuscated band; venter, in examples which have not partaken of a meal of blood, pale ochreous brown, margins of the third to the sixth infuscated; stigmata dusky ochreous.

FEMALE.—Colour pattern closely resembling that of the male, but with the hind and lateral margins generally more strongly pronounced.

Type, female, Songwe River, N. Nyasa, 7th January, 1909 (Dr. J. B. Davey). Co-type, male, near Kporo, N. Nyasa, 5th August, 1909 (Dr. J. B. Davey).

Glossina grossa, Bigot.

Ann. Soc. Ent. Fr., Vol. LX, p. 377 (1891). Female only.

This species is distinguishable from *Glossina fusca* by its generally darker colour; the darker hind tarsi in the male; the narrow lines on the thorax and the strongly pubescent character of the antennae. Morphologically also in the male armature by the form of the clasperettes, the large group of squamiform spines over the harpes, and the broad dark sclerite arising from its anterior portion near the base of the mantle.

Length.—11-12 mm.; length of wing, 11-11.50 mm.

Thorax very dark brown to blackish brown, with very narrow pale longitudinal stripes, scarcely broader than the pale transverse suture. *Abdomen* blackish brown, with the second (largest) segment markedly paler. *Legs* dusky; hind tibiae either all dark or with the last two black, the rest also rather dark but gradually paling proximally; hind and middle femora with a broad infuscated band.

MALE.—*Head* dusky brown to dusky buff. Posterior surface dusky grey, sometimes darker towards the upper margins; facial pit grey to ochreous grey; frontal margins shimmering creamy white or yellow white. *Antennae* with the terminal segment *strongly recurved, and clothed with long pubescent hairs*, the longest hairs on the dorsal edge being equal to about three-fourths the width of the segment. *Palpi* long, relatively thin and dark brown, tips slightly darker. Bulb of proboscis pale, with the proximal portion faintly infuscated.

Thorax.—Very dark brown to blackish brown, with very narrow, pale, longitudinal stripes, the sub-median ones being generally sharply and clearly defined, and scarcely broader than the pale transverse suture; pleurae dark brown.

Abdomen.—Blackish brown, with the second segment ochreous brown, there is no median stripe to the remaining segments, but a trace of ochreous brown is faintly visible on the third, fourth and fifth; lateral margins of all the segments narrowly paler than the rest; venter dusky ochreous; sides of the third, fourth and fifth segments, and also the hypopygium, infuscated; stigmata white.

Legs.—Yellowish brown or buff; femora broadly and distinctly infuscated, especially the middle and hind pair; middle and hind tibiae also with a very broad infuscated blotch; anterior tarsi with the tip of the fourth segment black, last segment dark at tip but not black; middle tarsi similar; hind tarsi all dark but the distal half of the third and the two succeeding ones all black; hairs on ventral surface bright golden brown.

The female differs from the male in having the legs decidedly paler; the hind tarsi with the last two segments black, the second and third with the tips only black. The thoracic and abdominal markings, and also the form and strongly pubescent character of the long terminal segment of the antennae are specifically the same as in the male.

Described from four examples, three males and one female. One male was taken at Kasongo, Congo Free State, 6th February, 1904 (Drs. Dutton and Todd), one at Sunyani, Ashanti, 5th March, 1910, and the third at Atroni, W. Ashanti, 16th August, 1910 (Dr. A. Kinghorn). The only female I have yet seen was taken at Odumase, W. Ashanti, 27th April, 1910, by Dr. A. Kinghorn.

Glossina fuscipes, n. sp.

This tsetse fly may be readily distinguished from *Gl. palpalis*, Rob.-Desv., by its much smaller size, by the uniformly infuscated or dusky legs, and the dusky grey thorax. In size it resembles *G. tachinoides*, West, but it is a relatively stouter built insect; and altogether it is most like a dwarfed specimen of *Gl. palpalis* with infuscated legs and a dusky thorax. The genital armature resembles those of *Gl. palpalis* and *Gl. tachinoides* in its general form; but the shape of the superior claspers and the inferior claspers are markedly distinct from those of either of these insects.

Length.— $7\frac{1}{2}$ mm.; length of wing, 8 mm.

MALE.—*Head*: Frontal stripe yellowish brown, margins dusky white; ocellar triangle buff, enclosing a very dark brown spot. *Antennae* grey; arista dark brown ventrally. *Palpi* smoky brown, with a paler narrow median line. *Proboscis* with the bulb dark castaneous.

Thorax with a median dark grey rectangular area extending from the front to the scutellum, the sides of which are perfectly straight and parallel, on either side of this grey area are two greyish-black, and somewhat triangular blotches, evidently remnants of those found in other species of *Glossina*; scutellum dark grey, with a very faint pale grey median line, margins buff; sides of the lateral thoracic depressions dark brown or almost black; pleurae dark grey.

Abdomen resembling that of *Gl. palpalis*, but the bilateral banding faintly pronounced; lateral margins with pale angular areas.

Legs strongly and almost uniformly infuscated (dark grey); femora with the basal and ventral portions ochreous buff; hind tarsi all dark brown or almost black.

Wings.—Anterior transverse vein strongly and suddenly incrassate at its junction with the third longitudinal vein.

HABITAT.—The only example which we possess of this interesting tsetse fly was taken by Dr. Shircore,* at Nimule, Nile Province, Uganda. Fortunately it proved to be a male, otherwise it may have passed as a small dusky form of *Glossina palpalis*.

* The data here given are taken from Dr. Shircore's letter; the actual locality is not stated by him. R. N.